

## Amendments to Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

1.(currently amended) A method of optimizing the optical characteristics of optical quality silica films in the manufacture of a silica waveguide, wherein said silica films are deposited by plasma enhanced chemical vapor deposition (PECVD) at a temperature between 100 and 650°C in the presence of ~~a~~ SiH<sub>4</sub> as a silicon-containing gas, ~~an~~ N<sub>2</sub>O as an oxygen-containing gas, and N<sub>2</sub> as a carrier gas, each said gas having a flow rate and wherein said silica films are free of boron and phosphorus, comprising:

a) setting the flow rates of said silicon-containing gas, said oxygen-containing gas, and said carrier gas at respective predetermined fixed values;

b) depositing silica films ~~at over a range of~~ different total deposition pressures ~~of~~ for said gases between 2.0 and 2.6 Torr at said predetermined fixed values;

c) subjecting the deposited silica films to a post-deposition low temperature treatment between 400° to 1200°C to minimize the presence of Si-O<sub>x</sub>-H<sub>y</sub>-N<sub>z</sub> ~~contaminant~~ compounds in said deposited silica films;

d) ~~observing-comparing the FTIR characteristics spectra of the deposited-silica films deposited at different total deposition pressures to find the optimum deposited silica film with the least amount Si-O<sub>x</sub>-H<sub>y</sub>-N<sub>z</sub> compounds present after said low temperature treatment; and~~

~~to determine the optimum total deposition pressure; and~~

e) depositing an optimized silica film in the silica waveguide by controlling said total deposition pressure of said optimized silica film to said optimum ~~the~~ total deposition pressure at which the optimum deposited silica film identified ~~determined~~ in step *d* was deposited.

2.(canceled)

3.(Currently amended) A method as claimed in claim 21, wherein said low temperature treatment is about 800°C.

4.(cancelled)

5.(cancelled)

6. (previously presented) A method as claimed in claim 1, wherein said silica films are deposited in a vacuum chamber whose pressure is maintained by a vacuum pump having a controllable pumping speed, and said total deposition pressure is maintained by controlling said pumping speed.

7. (cancelled)

8.(previously presented) A method as claimed in claim 1, wherein said silica films are deposited at a temperature of about 400°C.

9.(cancelled)

10.(canceled)

11.(canceled)

12.(canceled) .

13.(canceled)

14.(previously presented) A method as claimed in claim 1, wherein the predetermined fixed values for the flow rates of said gases are selected to optimize the quality of the deposited films after said low temperature treatment.

15.(currently amended) A method as claimed in claim ~~13~~1, wherein the predetermined fixed values of the flow rates of said gases are selected to optimize the quality of the deposited films after said low temperature treatment.

16.(original) A method as claimed in claim 15, wherein the flow rate of the SiH<sub>4</sub> is about 0.2 std liter/min.

17.(original) A method as claimed in claim 16, wherein the flow rate of the N<sub>2</sub>O is about 6.00 std liter/min.

18.(original) A method as claimed in claim 17, wherein the flow rate of the N<sub>2</sub> is about 3.15 std liter/min.

19.(previously presented) A method as claimed in claim 1, wherein modifiers are incorporated into said silica films during deposition to modify the resulting refractive index.

20.(previously presented) A method as claimed in claim 19, wherein said modifiers are selected from the group consisting of: Phosphorus, Boron, Germanium, Titanium and Fluorine.

21.(currently amended) A method of depositing an optical quality silica film on a substrate of a silica waveguide in the manufacture of optical multiplexers and demultiplexers wherein said optical quality silica film is deposited on said substrate at a temperature between 100 and 650°C by plasma enhanced chemical vapor deposition (PECVD) in the presence of ~~a silicon-containing gas~~ SiH<sub>4</sub>, ~~an oxygen-containing gas~~ N<sub>2</sub>O, and ~~a carrier gas~~ N<sub>2</sub>, each said gas having a flow rate, and wherein said silica film is free of boron and phosphorus, comprising:

a) fixing the flow rate of said ~~silicon-containing gas~~ SiH<sub>4</sub>, ~~an oxygen-containing gas~~ N<sub>2</sub>O, and ~~said carrier gas~~ N<sub>2</sub> at about 0.2 std liter/min, 6.0 std liter/min., and 3.15 std. liter/min respectively;

b) depositing the silica film on said substrate at a total deposition pressure of about 2.4 Torr; and

c) subjecting said deposited silica film to a low temperature treatment at about 800°C to minimize the presence of Si-O<sub>x</sub>-H<sub>y</sub>-N<sub>z</sub> compounds.

22.(previously presented) A method as claimed in claim 21, wherein said silica film is deposited in a vacuum chamber whose pressure is maintained by a vacuum pump having a controllable pumping speed, and said total deposition pressure is maintained by controlling said pumping speed.

23.(currently amended) A method as claimed in claim 21, wherein said silica film is deposited at a temperature of about 400°C.

Claims 24 to 27 are cancelled.